

Claims

1. An electrostatic discharge system for a road vehicle comprising:
at least one electrically conducting conductor element in
electrical contact with an electrically conducting part of the
vehicle body;

actuation means mountable to said vehicle, said actuation means adapted for selectively and reversibly moving said conductor element between a deployed position and a retracted position, wherein in said deployed position said conductor element is in contact with the ground such as to provide an electrical pathway for electric charge from said electrically conducting part of the vehicle body to the ground, and wherein in said retracted position said conductor element is distanced from the ground such as to interrupt said electrical pathway; and

control means operatively connected to said actuation means and to a user interface, adapted for controlling operation of said actuation means responsive to an interaction with said user interface.

2. A system as claimed in claim 1, wherein said actuating means comprises a bracket for mounting said actuating means to the vehicle, and a strut member having a free end near which said conductor element is pivotably mounted for rotation with respect thereto via a pivot, said conductor element having a free end adapted for contacting the ground when in the said deployed position.

3. A system as claimed in claim 2, wherein said actuation means comprises a driving means operatively connected to said conductor element and controlled by said control means for enabling deployment and retraction of said conductor element.

4. A system as claimed in claim 3, wherein said driving means is in the form of a bracket mounted on said conductor element, and said control means is in the form of a clamp that is operatively connected to said user interface, said user interface being adapted to provide a reciprocating motion correlated to
deploying and retracting said conductor element, said control means being

connected to said driving means via a mechanical linkage, such that a translation of said control means provided by the user interface causes a rotational motion of said driving means, which in turn drives the free end of said conductor element to said deployed or retracted positions.

5. A system as claimed in claim 4, wherein said conducting element is adapted for enabling the said driving means to be mounted thereonto in at least one of a plurality of positions with respect thereto.

6. A system as claimed in claim 3, wherein said driving means is in the form of an extension of said conductor element on the opposite side of said pivot, and said control means is in the form of a clamp that is operatively connected to said user interface, said user interface being adapted to provide a reciprocating motion correlated to deploying and retracting said conductor element, said control means being connected to said driving means via a mechanical linkage, such that a translation of said control means provided by the user interface causes a rotational motion of said driving means, which in turn drives the free end of said conductor element to said deployed or retracted positions.

7. A system as claimed in claim 3, wherein said driving means comprises a rack and pinion arrangement, comprising a rack component joined to said clamp and a complementary pinion component joined to said conductor element coaxial with said pivot.

8. A system as claimed in claim 6, further comprising a restoring spring mounted to said extension and said strut member, such that said spring stores potential energy when said conductor element is moved from said deployed position to said retracted position or from said retracted position to said deployed position.

9. A system as claimed in claim 8, wherein said spring stores potential energy by compression thereof between said extension and said strut member.

10. A system as claimed in claim 8, wherein said spring stores potential energy by being elastically stretched between said extension and said strut member.

11. A system as claimed in claim 1, wherein said actuating means are mountable to an underside of said vehicle.

12. A system as claimed in claim 1, wherein said actuating means are made from

an electrical conducting material.

13. A system as claimed in claim 1, further comprising an electrical conductor fixed to said electrically conducting part of said vehicle and to said conductor element.

14. A system as claimed in claim 2, wherein said conductor element comprises an upper part pivotably mounted to said bracket and a lower part comprising said free end.

15. A system as claimed in claim 14, wherein said lower part is telescopically slidable with respect to said upper part for adjusting a longitudinal length of said conductor element.

16. A system as claimed in claim 2, wherein said free end is in spherical form.

17. A system as claimed in claim 14, wherein said lower part is in substantially rectilinear form.

18. A system as claimed in claim 14, wherein said lower part is in substantially helical form.

19. A system as claimed in claim 1, wherein said user interface comprises the handbrake system of the vehicle, and said control means comprise a suitable clamp for clamping a brake cable associated with said handbrake system such as to operate said actuation means to selectively deploy or retract said conductor element according to whether said handbrake is in the on or off position, respectively, such as to reciprocally displace the associated brake cable from one position to another position, responsive to an interaction with said handbrake system by a user.

20. A system as claimed in claim 19, further comprising a suitable arrangement of pulleys for displacing the brake cable of the vehicle in a direction away from the chassis thereof.

21. A system as claimed in claim 1, wherein said system is in the form of a device that is mountable to a chassis of said vehicle and that may be operatively connected to a handbrake cable of said vehicle.

22. A system as claimed in claim 21, wherein said device is retrofittable to a road vehicle.

23. A system as claimed in claim 1, wherein said actuation means are powered by suitable power means including any one of pneumatic, electrical or hydraulic power means.
24. A system as claimed in claim 23, wherein said actuator means comprises an electrical motor.
25. A system as claimed in claim 24, wherein said actuator means comprises an electrical stepper motor.
26. A system as claimed in claim 24, wherein said motor comprises a shaft connected to said conductor element and wherein said shaft is capable of selectively and reversibly rotating the shaft through a predetermined arc α , from said retracted position said deployed position, and back to the retracted position.
27. A system as claimed in claim 24, wherein said motor is connected to a suitable electrical power source and said user interface via a suitable circuit.
28. A system as claimed in claim 27, wherein said interface comprises the brake light circuit of said vehicle.
29. A system as claimed in claim 28, wherein selective completion or braking of said brake light circuit, responsive to an interaction by user comprising actuation or release of the brake, reversibly deploys or retracts said conductor element.
30. A system as claimed in claim 27, wherein said interface comprises the parking light circuit of said vehicle.
31. A system as claimed in claim 30, wherein selective completion or braking of said parking light circuit, responsive to an interaction by user comprising actuation or release of the parking mode of the gearbox of the vehicle, reversibly deploys or retracts said conductor element.
32. A system as claimed in claim 27, wherein said interface comprises a suitable switch actuatable by a user in the vehicle.
33. A system as claimed in claim 32, wherein selective completion or braking of a switch light circuit of said switch, responsive to an interaction by user comprising actuation or inactivation of said switch, reversibly deploys or retracts said conductor element.
34. A system as claimed in claim 23, wherein said actuating means comprises a

suitable housing mountable to an underside of said vehicle.

35. A system as claimed in claim 23, further comprising an electrical conductor fixed to said electrically conducting part of said vehicle and to said conductor element.

36. A system as claimed in claim 26, wherein said conductor element comprises an upper part pivotably mounted to said shaft and a lower part comprising a free end.

37. A system as claimed in claim 36, wherein said lower part is telescopically slidable with respect to said upper part for adjusting a longitudinal length of said conductor element.

38. A system as claimed in claim 36, wherein said free end is in spherical form.

39. A system as claimed in claim 36, wherein said lower part is in substantially rectilinear form.

40. A system as claimed in claim 36, wherein said lower part is in substantially helical form.

41. A system as claimed in claim 1, wherein said user interface comprises a suitable computer programmed to provide suitable deployment and retracting signals to said control means according to predetermined conditions, and
wherein said control means comprise suitable power means for powering a driving means according to signals received from said computer.

42. A system as claimed in claim 41 further comprising a motion sensor operatively connected to said computer, and wherein said computer is programmed to provide appropriate deployment signal to said actuation means when said motion sensors sense an absence of motion by the vehicle.

43. A method for discharging static electricity from a vehicle comprising :-

(a) providing a selectively retractable and deployable electrical conductor in electrical contact with the vehicle body;

(b) when it is desired to provide a ground path for the vehicle, deploying the conductor such as to contact the ground;

(c) when it is desired to stop such contact, retracting the conductor.

44. A method as claimed in claim 43, wherein the step of providing a ground path for the vehicle is advantageously associated with operation of the handbrake system of the vehicle.